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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/598,029
Filing Date: August 16, 2006
Appellant(s): RYUH ET AL.

Erik Preston
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed October 14, 2010 appealing from the Office action mailed January 21, 2010.

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(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1 and 3-10

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

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The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

JP PUB 2001-117533	NOBUYOSHI	04-2001
US PUB 2002/0154077	WAKITA	10-2002
US PUB 2002/0003522	BADA	01-2002
US PAT 6,360,149	KWON	3-2002
US PAT 7,154,488	MORITA	12-2006

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

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Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobuyoshi (JP Pub. No. 2001-117533) in view of Wakita (US 2002/0154077).

As to claim 1, Nobuyoshi teaches a display device [drawing 1] comprising a display panel ("170") [drawing 1] and driving circuitry ("11", "12", "13", "14", "15", "16", "18", and "19") for driving the display panel, wherein,

the display panel includes a first display section ("170a") and a second display section ("170b") [drawing 1];

the first display section ("170a") includes a plurality of first scanning lines (the plurality of horizontal lines arranged on the panel "170a") [drawing 1], a plurality of first signal lines (the plurality of vertical lines arranged on the panel "170a"), a plurality of first pixels each connected to one of the plurality of first scanning lines and one of the plurality of first signal lines [paragraph (0001)];

the second display section ("170b") includes a plurality of second scanning lines (the plurality of horizontal lines arranged on the panel "170b") [drawing 1], a plurality of second signal lines (the plurality of vertical lines arranged on the panel "170b"), a plurality of second pixels each connected to one of the plurality of second scanning lines and one of the plurality of second signal lines [paragraph (0001)]; and

the driving circuitry includes a first scanning line driving circuit ("scanning driver 16a") [drawing 1] for supplying a first scanning signal to the plurality of first scanning lines, a first signal line driving circuit (a combination of "14a" and "15a") for supplying a first data signal to the plurality of first signal lines, a second scanning line driving circuit ("scanning driver 16b") for supplying a second scanning signal to the plurality of second scanning lines, and a second

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signal line driving circuit (a combination of “14b” and “15b”) for supplying a second data signal to the plurality of second signal lines, the driving circuitry being capable of driving the first display section (“170a”) with a first vertical scanning frequency and driving the second driving section (“170b”) with a second vertical scanning frequency which is different from the first vertical scanning frequency [paragraph (0030), emphasis on the last 6 lines].

Nobuyoshi does not expressly teach a plurality of switching elements each of which is connected to one of the plurality of first and second pixels.

However, Examiner takes Official Notice that it is well known in the art to include a plurality of switching elements in a liquid crystal display and to connect each of the plurality of switching elements to each of a plurality of pixels to control data transmission from a data driver to the plurality of pixels.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display device taught by Nobuyoshi to include a plurality of switching elements and to connect each of the plurality of switching elements to each of the plurality of pixels, in order to reduce the power consumption of the display device (Note that an active matrix type liquid crystal display device consumes less power than a passive matrix type liquid crystal display device.).

Nobuyoshi does not expressly teach the first and second vertical scanning frequencies being first and second frequencies when the first and second display sections are displaying still images and the first and second vertical scanning frequencies being third and fourth frequencies when the first and second display sections are displaying moving images, wherein the first and second frequencies are lower than the third and fourth frequencies.

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However, Wakita [claim 13] teaches the concept of driving a display section at a first frequency when the display section displays still images and at a second frequency when the display section displays moving images, wherein the first frequency is lower than the second frequency.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display device of Nobuyoshi to drive the display sections at first and second frequencies when the display sections display still images and at third and fourth frequencies when the display sections display moving images, wherein the first and second frequencies are lower than the third and fourth frequencies, as taught by Wakita, in order to optimize the power consumption of the display device of Nobuyoshi.

As to claim 3, Nobuyoshi teaches that the display panel is a liquid crystal display panel [paragraph (0001)] having a pair of substrates and a liquid crystal layer provided between the pair of the substrates.

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobuyoshi and Wakita, and further in view of Baba (US 2002/0003522).

As to claims 4 and 5, Nobuyoshi teaches the display device of claim 3, wherein, during one vertical scanning period, the first (a combination of “14a” and “15a”) [drawing 1] and second signal line driving circuits (a combination of “14b” and “15b”) [drawing 1] supply the first and second data signals to the plurality of first and second pixels, respectively [paragraph (0021)]; and

for a predetermined length of time within the length of time corresponding to one vertical scanning period, the plurality of first and second pixels are placed in a state of retaining the first

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and second data signals, respectively [paragraph (0001), pixels of a liquid crystal display retain image data signals in a frame period].

Nobuyoshi as modified by Wakita does not teach that the first and second signal line driving circuits supply first and second black display signals corresponding to display black to the plurality of first and second pixels with a different timing from the timing of supplying the first and second data signals during one vertical scanning period and the plurality of first and second pixels are placed in a state of retaining the first and second black signals for a predetermined second length of time within the length of time corresponding to one vertical scanning period.

However, Bada teaches a display device [fig. 7] comprising a signal line driving circuit (“signal line driving circuit 25”) which supplies black data signal corresponding to display black [fig. 3] to a plurality of pixels with a different timing from the timing of supplying data signals during one vertical scanning period, wherein the plurality of pixels are placed in a state of retaining the black signals for a predetermined second length of time (“black image display period”) [fig. 3] within the length of time corresponding to one vertical scanning period.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first and second signal line driving circuits taught by Nobuyoshi as modified by Wakita to supply first and second black display signals corresponding to display black to the plurality of first and second pixels with a different timing from the timing of supplying the first and second data signals during one vertical scanning period, wherein the plurality of first and second pixels are placed in a state of retaining the first and second black signals for a predetermined second length of time within the length of time corresponding to one vertical

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scanning period, as taught by Bada, in order to prevent blurring phenomenon of the display device.

Claims 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobuyoshi and Wakita, and further in view of Kwon (US 6,360,149).

As to claim 6, Nobuyoshi as modified by Wakita does not teach the display device of claim 1 being a display device for an instrument panel mounted in an automotive vehicle.

However, Kwon teaches a concept of providing a display device (“display screen 36”) [fig. 4] for an instrument panel (“command module 20”) mounted in an automotive vehicle, wherein the display device displays at least a velocity of the automotive vehicle and/or a number of revolutions of an engine of the automotive vehicle [col. 4 lines 54-60] and the display device includes a touch sensor selectively provided in the panel of the display device [col. 3 lines 12-14].

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the display device taught by Nobuyoshi as modified by Wakita for an instrument panel mounted in an automotive vehicle to display at least a velocity of the automotive vehicle and/or a number of revolutions of an engine of the automotive vehicle and to modify the display device to include a touch sensor, as taught by Kwon, in order to provide an instrument panel for an automotive vehicle including an electronic display capable to display different videos from different video sources simultaneously.

As to claim 7, Nobuyoshi as modified by Wakita and Kwon teaches the display device of claim 6, wherein,

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the first display section displays at least a velocity of the automotive vehicle and/or a number of revolutions of an engine of the automotive vehicle [Kwon: col. 4 lines 54-60]; and

the first vertical scanning frequency is higher than the second vertical scanning frequency (Note that the display device taught by Nobuyoshi is configured to display images/videos having different vertical scanning frequencies on the display panel, simultaneously) [Nobuyoshi: paragraph (0030)].

As to claim 8, Nobuyoshi as modified by Wakita and Kwon teaches that the display panel includes a touch sensor selectively provided in one of the first display section and the second display section, as discussed with respect to the rejection of claim 6.

As to claim 10, Nobuyoshi as modified by Wakita and Kwon teaches that an automotive vehicle [Kwon: fig. 4] comprises an instrument panel (“command module 20”) [Kwon: fig. 4] which includes the display device of claim 6.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nobuyoshi and Wakita, and further in view of Morita (US 7,154,488).

Nobuyoshi teaches the display device comprising the driving circuitry, as discussed with respect to the rejection of claim 1.

Nobuyoshi as modified by Wakita does not expressly teach the driving circuitry being formed directly on a substrate of the display panel.

However, Morita teaches a concept of forming a driving circuitry of a display device directly on a substrate of a display panel of the display device [col. 3 lines 13-17].

It would have been obvious to one of ordinary skill in the art at the time of the invention to form the driving circuitry taught by Nobuyoshi as modified by Wakita directly on the

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substrate of the display panel, as taught by Morita, in order to minimize the amount of space required to form the components needed to drive the display panel of Nobuyoshi.

(10) Response to Argument

Based on the Appellant's arguments, the Appellant's main argument is that the teaching of Wakita, changing the driving frequency of a display device, is not applicable to the display device of Nobuyoshi. And, in order to support the Appellant's above argument, the Appellant relies on the assertion that including normally white (herein after "NW") and normally black (herein after "NB") pixels in a display device is a requirement to change the driving frequency of the display device. However, the Examiner respectfully submits that the Appellant's above assertion that including NW and NB pixels in a display device is a requirement to change the driving frequency of the display device is simply **incorrect**. As explained in the Advisory action mailed May 27, 2010, a NW pixel is merely a pixel which displays white when no voltage is applied to and displays black when a full voltage is applied to. Similarly, a NB pixel is merely a pixel which displays black when no voltage is applied to and displays white when a full voltage is applied to. Whether a pixel is a NW pixel or a NB pixel is not directly related to a vertical scanning frequency of a display device. Thus, the type of a pixel is not a requirement of adjusting the vertical scanning frequency of the display device. Also, in the Advisory action, the Examiner requested the Appellant either to cite the portion of Wakita reference which discloses anything regarding the requirement or to explain how having a NW pixel and a NB pixel is a requirement for driving a display device at two different frequencies. However, the Examiner respectfully submits that the Appellant has failed to respond to the Examiner's request. The

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Appellant's explanation regarding Wakita, disclosed in pages 12 and 13 of the Appeal Brief is merely the benefit or advantage of the **whole structure** (emphasis added) of the display device of Wakita, which requires a NW pixels and a NB pixel. However, the motivation of applying the teaching of Wakita to the display device of Nobuyoshi is not for obtaining such benefit or advantage. The Appellant further argues [pg 13-14], "As the Examiner is aware, normally white pixels and normally black pixels have substantially different applied voltage requirements and viewing angle characteristics and could not be used in systems which switch between different display formats that require different horizontal and vertical frequencies because the hardware requirements for such a system that requires both normally white pixels and normally black pixels would change for each different display format, and thus could not be implemented in Nobuyoshi..". However, as explained above, **any one** of NW pixels, NB pixels, and a combination of NW and NB pixels can be used in systems which switch between different display formats. Lastly, the Appellants argues [pg 14] that the combination of the cited prior arts is based on the Applicant's own invention. However, Wakita teaches the concept of lowering driving frequency and **one of ordinary skill in the art at the time of the invention would know** that lowering driving frequency lowers the power consumption.

In summary, the Appellant's assertion that including NW and NB pixels in a display device is a requirement to change the driving frequency of the display device is **incorrect** and thus the Appellant's argument that the teaching of Wakita, changing the driving frequency of a display device, is not applicable to the display device of Nobuyoshi is not persuasive.

(11) Related Proceeding(s) Appendix

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No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Examiner, Art Unit 2629

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